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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/806,782	03/23/2004	Sven Enerback	13425-036002	2795

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EXAMINER	
SCHNIZER, RICHARD A	

ART UNIT	PAPER NUMBER
1635	

DATE MAILED: 08/07/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/806,782	ENERBACK ET AL.	
	Examiner	Art Unit	
	Richard Schnizer, Ph. D	1635	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-17* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-17* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *23 March 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☒ Certified copies of the priority documents have been received in Application No. 09/085,380.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *3/23/04*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

This Application is a divisional of 09/587,945 (now US Patent 6,709,860), which is a CIP or 09/085,380 (abandoned), and which claims priority to provisional application 60/190,692 (3/20/2000), and foreign application SE 9701963-2 (5/26/97).

Clams 1-17 are pending and under consideration in this Office Action.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-17 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 1-17 are rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential steps, such omission amounting to a gap between the steps. See MPEP § 2172.01. The claims recite no active method steps. It is unclear how one determines whether a test compound activates expression of the FKHL14/FOXC2 gene. It is unclear what steps are required to make this determination, or even to elicit an effect of the test compound on the gene. While the specification discloses the use of transgenic animals in the method, and does not contemplate any embodiment lacking transgenic animals, the claims are not so limited.

Claims 1-17 are indefinite because the metes and bounds of "a medical condition related to obesity" are unclear. The specification states at page 24 lines 4 and 5 that

the phrase "includes e.g. obesity, NIDDM, hypertension, and hyperlipidemia." However, this definition is non-limiting, and one of skill in the art cannot know the metes and bounds of the claims because the nature of the required relationship to obesity is not clear.

Claims 1-17 are indefinite because is unclear what are the metes and bounds of "the FKHL14/FOXC2 gene". The term "FKHL14" is recognized in the art as denoting a human gene locus encoding a mesenchyme fork head-1 protein. The term FOXC2 is also recognized in the art as referring to mesenchyme fork head-1 genes and proteins, but the term is applied to murine species as well as humans and possibly others. See e.g. Kume et al (Development 127: 1387-1395, 2000), abstract), and Fang et al (American Journal of Human Genetics, 2000, 67(6): 1382-1388, 2000, abstract). As a result, it is unclear if the claims are intended to embrace only human genes or genes from mouse and other species as well. The portion of the specification supporting the instant claims, i.e. page 24, line 19 to page 25, line 8, indicates that the gene to be used in the method is a human gene. So, for the purpose of examination, the claims will be interpreted as being drawn to a human gene. However, even this interpretation, the claims still recite "the FKHL14/FOXC2 gene" without proper antecedent basis, because there is more than one form of the human FKHL14 gene and it is unclear to which allele the claims refer. As evidence see Fang (2000) above, and also Kovacs et al (Diabetes 52: 1292-1295, 2003) who report genetic variation in both the putative promoter region and 3' untranslated regions. See abstract. Note that while substitution of 'a' for 'the'

would overcome this indefiniteness rejection, it would raise the issue of adequate written description regarding the genus of FKHL14/FOXC2 genes.

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Enablement

Claims 1-17 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

The claims are drawn to methods of identifying a compound useful for treatment of a medical condition related to obesity comprising determining whether or not a test compound activates expression of the FKHL14/FOXC2 gene. The claims require no active method steps, and the scope of "a condition related to obesity" is extremely broad. In view of the specification at pages 24 and 25, "the FKHL14/FOXC2 gene" is interpreted as a human gene.

The specification at pages 24 and 25 teach that the claimed method can be carried out by contacting the human FKHL14/FOXC2 gene with a test agent. The specification does not envision performing this method in vivo in a human, and provides no guidance as to how to do so. The specification teaches that the claimed method can

be carried out using a transgenic animal comprising a human FKHL14/FOXC2 gene. See e.g. page 24, lines 26-32. One of ordinary skill in the art understands that in order to determine whether or not a test compound activates expression of the human FKHL14/FOXC2 gene, one would require as a critical element the promoter region of the gene. However, the instant specification does not disclose this promoter, and so fails to disclose a critical element required for the practice of the method as disclosed in the specification. Furthermore, the specification provides no guidance as to what parameter should be measured in the determination of "activation of expression" or how this parameter should be determined. While Applicant is not required to disclose that which is well known in the art, there is an obligation to disclose critical elements of the invention as well as how to use these elements. In Genentech, Inc, v Novo Nordisk A/S, the court found that when the specification omits any specific starting material required to practice an invention, or the conditions under which a process can be carried out, there is a failure to meet the enablement requirement. See 42 USPQ2d 1001.

> It is true, as Genentech argues, that a specification need not disclose what is well known in the art. See, e.g., Hybritech Inc. v. Monoclonal Antibodies, Inc., 802 F.2d 1367, 1385, 231 USPQ 81, 94 (Fed. Cir. 1986). However, that general, oft-repeated statement is merely a rule of supplementation, not a substitute for a basic enabling disclosure. It means that the omission of minor details does not cause a specification to fail to meet the enablement requirement. However, when there is no disclosure of any specific starting material or of any of the conditions under which a process can be carried out, undue experimentation is required; there is a failure to meet the enablement requirement that cannot be rectified by asserting that all the disclosure related to the process is within the skill of the art. It is the specification, not the knowledge of one skilled in the art, that must supply the novel aspects of an invention in order to constitute adequate enablement. This specification provides only a starting point, a direction for further research.

In this case, the portion of the FKHL14/FOXC2 gene required to activate expression, i.e. the promoter and/or enhancer, is not a minor detail that can be overlooked in the process of providing an enabling disclosure, and neither is the nature of the determination or assay, or the means to accomplish the determination or assay, or the steps that should be employed. As a result one of skill in the art would have to perform undue experimentation in order to practice the invention as claimed.

Even if the specification enabled a method of determining whether a test compound activated expression of the FKHL14/FOXC2 gene, the specification fails to enable a method for identifying a compound useful for treatment of a medical condition related to obesity. MPEP 2164.03 indicates that the physiological art is unpredictable. "A single embodiment may provide broad enablement in cases involving predictable factors, such as mechanical or electrical elements. In re Vickers, 141 F.2d 522, 526-27, 61 USPQ 122, 127 (CCPA 1944); In re Cook, 439 F.2d 730, 734, 169 USPQ 298, 301 (CCPA 1971). However, in applications directed to inventions in arts where the results are unpredictable, the disclosure of a single species usually does not provide an adequate basis to support generic claims. In re Soll, 97 F.2d 623, 624, 38 USPQ 189, 191 (CCPA 1938). In cases involving unpredictable factors, such as most chemical reactions and physiological activity, more may be required. In re Fisher, 427 F.2d 833, 839, 166 USPQ 18, 24 (CCPA 1970) (contrasting mechanical and electrical elements with chemical reactions and physiological activity). See also In re Wright, 999 F.2d 1557, 1562, 27 USPQ2d 1510, 1513 (Fed. Cir. 1993); In re Vaeck, 947 F.2d 488, 496, 20 USPQ2d 1438, 1445 (Fed. Cir. 1991). This is because it is not obvious from the

disclosure of one species, what other species will work." In the instant case, the specification does not disclose a single species of test compound that activates expression of FKHL14/FOXC2, nor does it provide adequate guidance as to how any such compound, if identified, could be formulated to provide the required effect in vivo. There is no guidance regarding how any molecule of any particular structure can be placed in contact with the FKHL/14FOXC2 gene in vivo in a human, such that any medical condition could be treated. As such one of sill in the art could not identify any compound that is useful for the treatment of a medical condition related to obesity as required by the claims.

The specification taught that transgenic mice overexpressing the human FKHL14/FOXC2 gene under control of an adipose-specific promoter showed resistance to diet induced weight gain and a decrease in: total body lipid content, serum triglycerides, plasma levels of free fatty acids, glucose and insulin. See page 16, lines 9-13. However, because the FKHL14/FOXC2 transgene was under control of an adipose specific promoter, it is reasonable to assume that the transgene was expressed in the vast majority of adipose cells in the transgenic animals. The specification as filed provides no guidance at all as to what will be the physical and chemical nature of agents that function to activate FKHL14/FOXC2 gene expression, and does not teach how to obtain delivery of any such agent to adipose cells such that a similar increase in FKHL14/FOXC2 gene expression is obtained. In view of the unpredictability of the physiological art in general, and the failure of the specification to provide guidance as to how to achieve agent delivery to adipose tissue or to the FKHL/14FOXC2 gene in that

tissue, and the vast breadth of medical conditions embraced by the claims, one of skill in the art would have to perform undue experimentation in order to practice the invention as claimed to obtain a compound useful for the treatment of any condition related to obesity.

Conclusion

No claim is allowed.

Any inquiry concerning this communication or earlier communications from the examiner(s) should be directed to Richard Schnizer, whose telephone number is 571-272-0762. The examiner can normally be reached Monday through Friday between the hours of 6:00 AM and 3:30. The examiner is off on alternate Fridays, but is sometimes in the office anyway.

If attempts to reach the examiner by telephone are unsuccessful, the Examiner's supervisor, Peter Paras, can be reached at (571) 272-4517. The official central fax number is 571-273-8300. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to (571) 272-0547.

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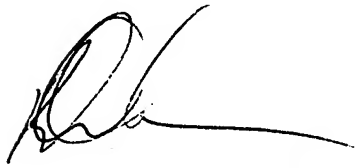

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Art Unit 1635